

IFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re original application of:

Applicants : Mark C. Schmidt, et al.
Application Serial No.: 10/758,603
Filing Date: : January 15, 2004
Title: WIRELESS BAR CODE SYMBOL DRIVEN PORTABLE
DATA TERMINAL (PDT) SYSTEM ADAPTED FOR SINGLE
HANDED OPERATION
Examiner : n/a
Group Art Unit : 2876
Attorney Docket No. : 108-182USANA0

Honorable Commissioner of Patents
and Trademarks
Washington, DC 20231

INFORMATION DISCLOSURE STATEMENT
UNDER 37 C.F.R. 1.97

Sir:

In order to fulfill Applicants' continuing obligation of candor and good faith as set forth in 37 C.F.R. 1.56, Applicants submit herewith an Information Disclosure Statement prepared in accordance with 37 C.F.R Sections 1.97, 1.98 and 1.99.

The disclosures enclosed herewith are as follows:

U.S. PUBLICATIONS

<u>NUMBER</u>	<u>FILING DATE</u>	<u>TITLE</u>
6,698,952	February 22, 1993	HAND HELD ENCODING INSTRUMENT
6,464,144	May 18, 2000	HAND HELD TERMINAL WITH AN ODOR SENSOR
6,415,156	September 9, 1999	TRANSACTION METHOD
6,398,112	March 31, 2000	APPARATUS AND METHOD FOR READING INDICIA USING CHARGE COUPLED DEVICE AND SCANNING LASER BEAM TECHNOLOGY
6,334,573	August 12, 1997	INTEGRATED SCANNER ON A COMMON SUBSTRATE HAVING AN OMNIDIRECTIONAL MIRROR

6,305,607	April 24, 1998	INTEGRATED BAR CODE READER AND RF TRANSCEIVER
6,182,898	November 22, 1999	BAR CODE SCANNER WITH INTUITIVE HEAD AIMING AND COLLIMATED SCAN VOLUME
6,164,853	September 9, 1999	ERGONOMIC HOUSING FOR A HANDHELD DEVICE
6,158,662	April 27, 1998	TRIGGERED OPTICAL READER
6,138,914	July 12, 1995	PORTABLE BAR CODE SCANNER APPARATUS
6,105,871	July 16, 1992	PORTABLE BAR CODE SCANNER APPARATUS
6,102,294	July 25, 1995	INTEGRATED SCANNER ON A COMMON SUBSTRATE
6,027,021	March 24, 1997	GRIP HELD AND GRIP OPERABLE DATA ENTRY DEVICE
6,021,947	December 10, 1998	INTEGRATED CIRCUIT IMPLEMENTED ON A SEMICONDUCTOR SUBSTRATE IN A BAR CODE READER
5,966,230	June 7, 1995	INTEGRATED SCANNER ON A COMMON SUBSTRATE
5,945,660	October 14, 1997	COMMUNICATION SYSTEM FOR WIRELESS BAR CODE READER
5,925,873	March 24, 1997	GRIP HELD AND GRIP OPERABLE DATA ENTRY DEVICE
5,914,480	April 9, 1997	SCANNING DEVICE FORMED FROM INTEGRATED COMPONENTS ON A SEMICONDUCTOR SUBSTRATE
5,786,582	December 8, 1995	OPTICAL SCANNER FOR READING AND DECODING ONE- AND TWO DIMENSIONAL SYMBOLOGIES AT VARIABLE DEPTHS OF FIELD

5,756,982	April 16, 1996	BODY-WEARABLE AUTOMATIC LASER SCANNER WITH POWER-CONSERVING CONTROL SUBSYSTEM
5,747,785	May 30, 1995	INTEGRATED HAND-HELD BAR CODE PROCESSING DEVICE CAPABLE OF AUTOMATIC SCAN AND DATA DISPLAY
5,616,906	January 3, 1995	GRIP HELD AND GRIP OPERABLE DATA ENTRY DEVICE
5,610,386	July 17, 1995	PORTABLE OPTICAL SCANNING SYSTEM INCLUDING RING HAVING BREAKAWAY ELEMENT
5,600,121	August 20, 1995	OFFICIAL READER WITH INDEPENDENT TRIGGERING AND GRAPHICAL USER INTERFACE
5,496,992	June 21, 1994	DUAL TRIGGER MULTIPLEXED DATA ENTRY TERMINAL
5,468,951	August 19, 1994	AUTOMATIC HAND-SUPPORTABLE CODE SYMBOL SCANNING DEVICE WITH IMPROVED LASER BEAM POINTING EFFICIENCY
5,424,525	November 4, 1993	PORTABLE BAR CODE SYMBOL READING DEVICE WITH BAR CODE SYMBOL DETECTION CIRCUIT FOR ACTIVATING MICROPROCESSOR IMPLEMENTED BAR CODE SYMBOL DECODER
5,420,411	July 29, 1993	COMBINED RANGE LASER SCANNER
5,371,348	October 16, 1992	PORTABLE DEVICE FOR HANDSFREE DATA ENTRY WITH VARIABLY- POSITIONABLE DISPLAY/SCANNER MODULE DETACHABLE FOR HANDHELD USE
5,354,977	October 23, 1992	OPTICAL SCANNING HEAD
5,347,113	March 25, 1993	MULTIPLE-INTERFACE SELECTION SYSTEM FOR COMPUTER

PERIPHERALS

5,340,971	September 17, 1991	AUTOMATIC BAR CODE READING SYSTEM HAVING SELECTABLE LONG RANGE AND SHORT RANGE MODES OF OPERATION
5,340,973	June 12, 1992	AUTOMATIC LASER SCANNING SYSTEM AND METHOD OF READING BAR CODE SYMBOLS USING SAME
5,334,821	July 16, 1992	PORTABLE POINT OF SALE TERMINAL
5,324,924	May 11, 1992	BAR CODE DECODER WITH CHANGEABLE WORKING RANGES
5,294,782	September 27, 1991	INTEGRATED PORTABLE DEVICE FOR POINT OF SALE TRANSACTIONS
5,280,162	January 25, 1993	OBJECT SENSING SYSTEM FOR BAR CODE LASER SCANNERS
5,272,324	October 9, 1992	PORTABLE SCANNER SYSTEM WITH TRANSCEIVER FOR TWO-WAY RADIO FREQUENCY COMMUNICATION
5,272,323	September 10, 1991	DIGITIZER FOR BARCODE SCANNER
5,262,627	November 16, 1993	SCANNING ARRANGEMENT AND METHOD
5,260,553	September 17, 1990	AUTOMATIC HAND-SUPPORTABLE LASER BAR CODE SYMBOL SCANNER AND METHOD OF READING BAR CODE SYMBOLS USING THE SAME
5,250,790	June 12, 1992	HAND-MOUNTED SCANNER WITH AUTOMATIC MANUAL INITIATION OF READING INDICIA
5,237,161	June 5, 1991	SYSTEM FOR AUTOMATICALLY READING SYMBOLS, SUCH AS BAR CODES, ON OBJECTS WHICH ARE PLACED IN THE DETECTION ZONE OF A SYMBOL READING UNIT, SUCH AS A BAR CODE SCANNER

5,216,233	October 26, 1992	VERSATILE RF TERMINAL-SCANNER SYSTEM
5,216,231	August 8, 1991	SELF-SCANNING CODE READING DEVICE
5,212,370	November 20, 1990	APPARATUS AND METHOD FOR EXTENDING LASER LIFE BY DISCONTINUOUS OPERATION
5,198,650	June 24, 1991	HANDS FREE/HAND HELD BAR CODE SCANNER
5,191,197	May 13, 1991	ARM MOUNTED SCANNER ACTUATABLE BY HAND MOVEMENT
5,180,904	October 24, 1991	BAR CODE SCANNER WITH AUTOMATIC DE-ACTIVATION OF SCAN UPON BAR CODE RECOGNITION
5,155,346	December 10, 1990	DEVICE FOR CONVERTING HAND-HELD SCANNER TO HANDS-FREE SCANNER TO HANDS-FREE SCANNER
5,153,417	August 6, 1990	BAR CODE READER USING HOLOGRAMS
5,132,523	December 10, 1990	DUAL MODE OPTICAL SCANNING SYSTEM
5,107,100	November 8, 1990	PORTABLE SCANNER WITH ON-BOARD KEYBOARD, DISPLAY, TRANSCEIVER AND PRINTER
5,086,215	October 26, 1988	METHOD AND APPARATUS FOR DISCRIMINATING OR LOCATING BAR CODES FOR AN OPTICAL MARK READER
5,075,538	October 16, 1989	PORTABLE LASER DIODE SCANNING HEAD
5,065,003	March 12, 1990	PORTABLE DATA INPUT/TRANSMISSION APPARATUS
5,059,777	September 21, 1989	SCANNING SYSTEM PRESENCE SENSING APPARATUS AND METHOD

5,023,438	November 24, 1998	PORTABLE DATA INPUT APPARATUS WITH DIFFERENT DISPLAY MODES
5,019,698	August 7, 1989	BAR CODE READING SYSTEMS HAVING ELECTRICAL POWER CONSERVATION AND LASER RADIATION POWER LIMITING MEANS
5,017,765	December 21, 1989	HAND HELD BAR CODE SCANNER WITH AUTOMATIC SCANNER DEENERGIZATION
5,015,833	February 23, 1990	SCAN BOARD MODULE FOR LASER SCANNERS
4,970,379	October 12, 1988	BAR CODE SCANNER SYSTEM AND SCANNER CIRCUITRY THEREFOR
4,962,980	January 23, 1989	LASER SCANNER ENGINE WITH FOLDED BEAM PATH
4,958,894	January 23, 1989	BOUNCING OSCILLATING SCANNING DEVICE FOR LASER SCANNING APPARATUS
4,935,610	December 15, 1988	HAND-HELD BAR CODE READER
4,933,538	October 21, 1988	SCANNING SYSTEM WITH ADJUSTABLE LIGHT OUTPUT AND/OR SCANNING ANGLE
4,930,848	January 26, 1989	PORTABLE LASER SCANNER WITH INTEGRAL SCANNER ENGINE
Des. 305,885	June 24, 1988	HAND-HELD OPTICAL SCANNER
4,897,532	January 9, 1989	PORTABLE LASER DIODE SCANNING HEAD
4,877,949	August 8, 1986	HAND-HELD INSTANT BAR CODE READER SYSTEM WITH AUTOMATED FOCUS BASED ON DISTANCE MEASUREMENTS
4,845,349	September 30, 1936	BAR CODE SCANNER LASER EMISSION REDUCTION

4,825,057	January 26, 1988	PORTABLE LASER DIODE SCANNING
4,816,660	May 19, 1988	PORTABLE LASER DIODE SCANNING HEAD
4,766,299	March 28, 1986	HAND-MOUNTED BAR CODE READER
4,766,297	January 8, 1987	DUAL MODE STATIONARY AND PORTABLE SCANNING SYSTEM
4,760,248	October 29, 1987	PORTABLE LASER DIODE SCANNING HEAD
4,736,095	February 20, 1986	NARROW-BODIED, SINGLE- AND TWIN- WINDOWED PORTABLE LASER SCANNING HEAD FOR READING BAR CODE SYMBOLS
4,713,785	April 18, 1985	METHOD OF INHIBITING PROCESSING OF DUPLICATIVE CODED LABEL SIGNALS
4,673,805	August 1, 1983	NARROW-BODIED, SINGLE- AND TWIN- WINDOWED PORTABLE SCANNING HEAD FOR READING BAR CODE SYMBOLS
4,647,143	April 4, 1984	LIGHT-BEAM SCANNING APPARATUS
4,639,606	October 26, 1984	BAR CODE SCANNER LASER RADIATION EXPOSURE LIMIT- CONTROL SYSTEM
4,621,189	October 8, 1985	HAND HELD DATA ENTRY APPARATUS
4,575,625	September 27, 1983	INTEGRAL HAND-HELD LASER SCANNER
4,570,057	August 6, 1984	INSTANT PORTABLE BAR CODE READER
4,521,678	January 23, 1984	BATTERY-POWERED OPTICAL BAR CODE READER AND VOLTAGE REGULATOR THEREFOR
4,496,831	November 16, 1981	PORTABLE LASER SCANNING SYSTEM

AND SCANNING METHODS

4,465,926	March 5, 1982	OPTICAL READING DEVICE FOR THE MANUAL OPTICAL SCANNING AND FOR EVALUATING OPTICALLY READABLE CHARACTER CODES
4,460,120	August 1, 1983	NARROW BODIED, SINGLE, AND TWIN- WINDOWED PROTABLE LASER SCANNING HEAD FOR READING BAR CODE SYMBOLS
4,431,912	November 13, 1981	METHOD FOR CONTROLLING THE OPERATION OF AN OPTICAL SCANNER
4,420,682	March 22, 1982	INTERACTIVE MAP INFORMATION EXCHANGE SYSTEM
4,409,470	January 25, 1982	NARROW-BODIED, SINGLE-AND TWIN- WINDOWED PORTABLE LASER SCANNING HEAD FOR READING BAR CODE SYMBOLS
4,387,297	February 29, 1980	PORTABLE LASER SCANNING SYSTEM AND SCANNING METHODS
4,282,425	August 4, 1981	INSTANT PORTABLE BAR CODE READER
4,279,021	February 15, 1979	PORTABLE DATA ENTRY APPARATUS INCLUDING PLURAL SELECTABLE FUNCTIONAL CONFIGURATIONS
4,240,064	December 16, 1980	POWER LIMITING CIRCUIT FOR BAR CODE READER
4,086,476	July 29, 1976	CONTROL CIRCUIT FOR A CODE READING DEVICE
4,072,859	October 4, 1976	WAND TURN-ON CONTROL

FOREIGN PUBLICATIONS

NUMBER

PUBLICATION DATE

TITLE

EP 460 669	November 12, 1991	SYMBOL READ DEVICE
0 424 976 A2	May 2, 1991	DATA READING DEVICE AND CONTROL SYSTEM HAVING DATA READING DEVICE
0 424 097 A1	April 24, 1991	ARTICLE DETECTION DEVICE AND METHOD FOR DETECTING THE ARTICLE
0 414 452 A1	February 27, 1991	HAND-HELD BAR CODE READER
0 323 848	July 12, 1989	OPTICAL IMAGE READING DEVICE

TECHNICAL PUBLICATIONS

The web-based publication entitled "Pocket-Sized Computing For Mobile Industry Professionals" by Symbol Technologies, Inc., <http://www.smbol.com/wp/stwp0006.htm>, 1998, pages 1-3.

The 1998 press release entitled "Symbol Adds Functionality To Palmpilot" by Symbol Technologies, Inc., <http://www.symbol.com/press.100pr.htm>, March 23, 1998, pages 1-2.

The product brochure for the Mh290 Hand Held Laser Scanner by Metrologic Instruments, Inc., 1987, pages 1-2.

The technical publication entitled "Hand-Held Holographic Scanner Having Highly Visible Locator Beam" by R.T. Cato, IBM Technical Disclosure Bulletin, Vol. 27, No. 4, September 1984, pages 2021-2022.

INTERNATIONAL SEARCH REPORTS

<u>App. No.</u>	<u>Filing Date</u>
PCT/US04/00762	January 12, 2004
PCT/US99/28530	December 2, 1999

STATEMENT OF PERTINENCE

U.S. Patent No. 6,698,952 to Goddard discloses an encoding instrument held in substantially the palmar axis of a hand has a concavo-curved keypad surface accessibly equidistant to the thumb of the holding hand. The primary surface of the keypad is substantially not coincidental with a handle. Encoding switches mounted on the keypad are connected by cable or wireless signal transmission to operate selected functions. A movement control device mounted at the thumb end of the handle is operated by the thumb of the holding hand. Analog switch movement is positively and negatively manipulated by digit fingers of the holding hand.

U.S. Patent No. 6,464,144 to Swartz et al. discloses hand held terminal has a display, a keying input, an odor sensor, a processor for receiving information from the keying input and from the odor sensor for processing same and for directing information onto the display and a housing for the keying input, odor sensor, display and processor.

U.S. Patent No. 6,415,156 to Stadelmann discloses a aransaction method for ordering goods or services by mobile telephone, with an an order for delivery being transmitted to the services provider via a mobile radio network. At least certain order data, in which at least a monetary amount is indicated, are packed in one or more SMS or USSD or e-mail short messages,

and are transmitted to a validation platform connected to a short message service center. The indicated monetary amount is deducted from a monetary account of the customer and is transferred to a monetary account of the services provider.

U.S. Patent No. 6,398,112 to Li et al. discloses a scanning device for reading indicia of differing light reflectivity, including bar code or matrix array symbols, has a single light emitter, such as a laser or light emitting diode, for generating a scanning light beam to visually illuminate sequential portions of the indicia. A sensor, such as a charge coupled or other solid state imaging device, simultaneously detects light reflected from portions of the indicia and generates an electrical signal representative of the spacial intensity variations the portions of the indicia. The scanning device may also include an ambient light sensor, and a second light emitter for use only in aiming or orienting the scanning device. A photodetector may also be provided to separately detect one symbol virtually simultaneous with the detection of another symbol by the sensor or to provide dual modalities. A method for reading indicia is also provided.

U.S. Patent No. 6,334,573 to Li et al. discloses an integrated scanner for scanning a barcode omnidirectionally is formed on a common substrate. The scanner may include a mirror assembly or scan module, a laser diode, and a detector, mounted on a single substrate or several connected substrates. Lenses can be used to focus a laser beam from the laser diode as well as expand a laser beam deflected by the micro-machined mirror.

U.S. Patent No. 6,305,607 to Katz et al. discloses an ergonomic housing for a handheld device is provided. The device includes an ergonomic housing that is shaped to fit comfortably in the palm of a human hand, while simultaneously allowing fingered tactile operation of a set of key members on the face and lateral portions of the housing. The device is particularly useful for one-handed operation of portable devices utilizing a keypad where operation of such a device using two hands is not desirable. The position of keys on the housing facilitates minimal movement of both the fingers and thumb of the operator to operate the keys of the device. Such manipulation of keys may also be accomplished completely by touch, due to the uniquely shaped keys strategically placed in rows on the housing face within close proximity of the operator's natural finger positions and additional keys placed within close proximity of the operator's natural thumb position. An integral strap enables an operator to maintain control of the device without being forced to maintain a constant grip on the housing. The device may be used as, for example, a remote control, portable telephone, pager, or calculator.

U.S. Patent No. 6,182,898 by Schmidt et al. (to which the present Application claims priority) discloses a fully automatic bar code symbol reading system comprising an automatic (i.e., triggerless) portable bar code symbol reading device with an omnidirectional projection laser scanning engine mounted within the head portion of its hand-supportable housing, and an associated base unit positioned within the data transmission range thereof without a physical wiring connection thereto. The hand-supportable bar code symbol reading device produces a narrowly confined scanning volume for omnidirectional scanning of code symbols presented therein, while preventing unintentional scanning of code symbols on nearby objects located outside thereof.

U.S. Patent No. 6,164,853 to Foote discloses an ergonomic housing for a handheld device is provided. The device includes an ergonomic housing that is shaped to fit comfortably in the

palm of a human hand, while simultaneously allowing fingered tactile operation of a set of key members on the face and lateral portions of the housing. The device is particularly useful for one-handed operation of portable devices utilizing a keypad where operation of such a device using two hands is not desirable. The position of keys on the housing facilitates minimal movement of both the fingers and thumb of the operator to operate the keys of the device. Such manipulation of keys may also be accomplished completely by touch, due to the uniquely shaped keys strategically placed in rows on the housing face within close proximity of the operator's natural finger positions and additional keys placed within close proximity of the operator's natural thumb position. An integral strap enables an operator to maintain control of the device without being forced to maintain a constant grip on the housing. The device may be used as, for example, a remote control, portable telephone, pager, or calculator.

U.S. Patent No. 6,158,662 to Kahn et al. discloses a system of reading indicia such as bar code symbols having a scanner for generating a scanning light beam directed toward a symbol to be read. A trigger manually displaceable from a first position to a second position produces a first light beam for aiming or positioning the reader. The trigger is automatically returnable, or held in the second position, or manually displaceable from the second position to the first position for initiating a scanning beam pattern for reading the symbol. A detector receives the reflected light from the symbol and produces electrical signals corresponding to data represented by the symbol.

U.S. Patent No. 6,138,914 to Campo et al. discloses a portable bar code scanner apparatus having a keyboard and a display mounted on the front face of the housing. The housing is configured to be held in the palm of one hand with the keys on the keyboard engageable by the thumb or fingers of the hand holding the housing. Only one hand is required for scan actuation and key entry and to maintain a comfortable precision grip. The portable bar code scanner apparatus may also include a radio for transmitting data to or receiving data from a host computer, and may be mounted on the back of the operator's hand for hands-free operation while in an object-sense mode.

U.S. Patent No. 6,105,871 to Campo et al. discloses a portable bar code scanner apparatus having a keyboard and a display mounted on the front face of the housing. The housing is configured to be held in the palm of one hand with the keys on the keyboard engageable by the thumb or fingers of the hand holding the housing. Only one hand is required for scan actuation and key entry and to maintain a comfortable precision grip. The portable bar code scanner apparatus may also include a radio for transmitting data to or receiving data from a host computer, and may be mounted on the back of the operator's hand for hands-free operation while in an object-sense mode.

U.S. Patent No. 6,102,294 to Swartz et al. discloses a light scanning system formed on a common substrate comprises a light scanner and a sensor. The light scanner scans light across a target. The sensor detects light reflected from the target and creates a signal representative of the detected light. The light scanner may include a light source and a deflector, such as a micro-machined scan module. The micro-machined scan module may comprise an electrode, a support mounted on the electrode, and a mirror element mounted at one end of the support, wherein a voltage applied between the electrode and mirror element bends the mirror element.

U.S. Patent No. 6,027,021 to Kumar discloses a grip held and grip operable data entry

device for data collection by an operator having a hand includes a narrow grip unit for entry of data and a housing extension for carrying certain components that would otherwise have to be carried within grip unit, allowing grip unit to be narrow for comfortable and secure gripping without elimination of any desired functionality. Grip unit includes main housing having a first side and a second side, the first housing grasped by the operator's hand with the thumb extending along the first side and the middle finger engaging the second side. A housing extension extends from and is carried by main housing behind the operator's thumb such that operator support for holding device is furnished by the operator's thumb and the operator's middle finger acting upon the first side and the second side of main housing, leaving the index finger free to engage and disengage a pushbutton. Grip unit eliminates or minimizes operator stress and fatigue, permits holster-type carrier operation, includes at least one automatic identification mechanism such as scanner module, provides full functionality and allows keypad entry in handheld and table-top orientation.

U.S. Patent No. 6,021,947 to Swartz discloses integrated circuit for use in a bar code reader and method of making the same. The integrated circuit includes a semiconductor substrate, as well as a laser diode driver circuit and a digitizer circuit implemented on the substrate. The integrated circuit may also include a decoder circuit, a scan element driver circuit, a microcontroller, or a communications interface, each implemented on the substrate.

U.S. Patent No. 6,966,230 to Swartz et al. discloses an integrated scanner for scanning a barcode is formed on a common substrate. The scanner may include a micro-machined mirror, a laser diode, and a detector, mounted on a single substrate or several connected substrates. Lenses can be used to focus a laser beam from the laser diode as well as expand a laser beam deflected by the micro-machined mirror. The scanner may also scan a barcode without using a micro-machined mirror by rotating the laser diode.

U.S. Patent No. 5,945,660 to Nakasuji et al. discloses a communication system for a wireless bar code reader which includes a wireless bar code reader transmitter for reading bar code information and transmitting a radio signal, and a receiver for receiving the radio signal from the wireless bar code reader transmitter and transmitting reception data to a host computer, wherein the receiver includes a reception indication section for indicating that the reception data is received. Accordingly, it is possible to notify an operator that the data has been transmitted normally and further to urge the operator to retransmit the data when the data has not been transmitted normally.

U.S. Patent No. 5,925,873 to Kumar discloses a grip held and grip operable data entry device for data collection by an operator having a hand includes a narrow grip unit for entry of data and a housing extension for carrying certain components that would otherwise have to be carried within grip unit, allowing grip unit to be narrow for comfortable and secure gripping without elimination of any desired functionality. Grip unit includes main housing having a first side and a second side, the first housing grasped by the operator's hand with the thumb extending along the first side and the middle finger engaging the second side. A housing extension extends from and is carried by main housing behind the operator's thumb such that operator support for holding device is furnished by the operator's thumb and the operator's middle finger acting upon the first side and the second side of main housing, leaving the index finger free to engage and disengage a push-button. Grip unit eliminates or minimizes operator stress and fatigue, permits

holster-type carrier operation, includes at least one automatic identification mechanism such as scanner module, provides full functionality and allows keypad entry in hand held and table-top orientation.

U.S. Patent No. 5,914,480 to Swartz discloses an optical reader for reading a target having a bar code to be read, in which a unitary semiconductor device is mounted in a housing having an opening. The unitary semiconductive device includes a semiconductive substrate and a plurality of integrated components at the surface of the semiconductive device for generating and directing a light beam outward from the surface of the substrate sequentially along a plurality of paths through the opening of the housing. A detector is disposed in the housing for intercepting reflected components of the outward-directed light beam. In two implementations, the light beam is directed respectively by a single movable reflector or by a plurality of deformable mirror devices mounted on the substrate. The housing includes a grip, such a pistol grip, at an extremity offset from the opening.

U.S. Patent No. 5,786,582 to Roustaei et al. discloses an optical device for reading one- and two-dimensional symbologies at variable depths of field, the device including a light source for projecting an emitted light towards the two-dimensional image and an optical assembly, or zoom lens, with dual field of view capability for focusing light reflected from the framed symbology onto a CCD detector for detecting the focused light and generating a signal therefrom. The dual field of view capability enables scanning of both wide and narrow fields of view.

U.S. Patent No. 5,756,982 to Knowles et al. discloses a portable automatic code symbol reading system having a laser scanning engine mounted upon the hand of its operator to provide hands-free automatic laser scanning capabilities. The automatic code symbol reading system includes a battery power supply aboard its hands-mounted housing, and a power-conserving control subsystem for conserving the consumption of electrical power during automatic portable laser scanning operations. The control subsystem of the present invention has a plurality of control centers which control the operation of the system components in accordance with preselected system control operations. Each of the control centers is responsive to control activation signals generated by certain of the system components upon the occurrence of predefined conditions. Certain of the control centers are capable of overriding other control centers to provide diverse control capabilities. These control capabilities facilitate execution of intelligent functions and power consumption measures required during automatic, hands-free code symbol reading operations.

U.S. Patent No. 5,747,785 to Miller discloses a reader unit having a pistol configuration with automatic scan components in a barrel portion and a battery pack therefor in a handgrip portion. A display may be directed upwardly and rearwardly in the normal hand-held disposition of the reader unit during scanning, and may be of relatively large area, e.g., so as to be adaptable to direct store delivery transactions. A smart card receptacle may facilitate use of the integrated reader and terminal unit for complex transactions. A base station for the hand-held unit may include an interface such that the memory of the hand-held unit appears as a disk drive during downloading to a personal computer.

U.S. Patent No. 5,616,906 to Kumar discloses a grip held and grip operable data entry device for data collection by an operator having a hand includes a narrow grip unit for entry of

data and a housing extension for carrying certain components that would otherwise have to be carried within grip unit, allowing grip unit to be narrow for comfortable and secure gripping without elimination of any desired functionality. Grip unit includes main housing having a first side and a second side, the first housing grasped by the operator's hand with the thumb extending along the first side and the middle finger engaging the second side. A housing extension extends from and is carried by main housing behind the operator's thumb such that operator support for holding device is furnished by the operator's thumb and the operator's middle finger acting upon the first side and the second side of main housing, leaving the index finger free to engage and disengage a pushbutton. Grip unit eliminates or minimizes operator stress and fatigue, permits holster-type carrier operation, includes at least one automatic identification mechanism such as scanner module, provides full functionality and allows keypad entry in handheld and table-top orientation.

US Patent No. 5,610,386 to Ball et al. discloses a hand-mounted laser scanner which includes a trigger switch 60 designed for operation by the user's thumb pushing in the direction of arrow 63, shown in Fig. 3.

U.S. Patent No. 5,600,121 to Kahn et al. discloses a system for reading indicia such as bar code symbols having a scanner for generating a scanning light beam directed toward a symbol to be read; a first actuator manually displaceable from a first position to a second position for producing a first light beam for aiming or positioning the reader, and a second actuator manually displaceable from a first position to a second position for initiating a scanning beam pattern for reading the symbol. The actuators are independently operative of each other. A detector receives the reflected light from the symbol and produces electrical signals corresponding to data represented by the symbol. A graphical user interface simplifies system control functions.

U.S. Patent No. 5,496,992 to Madan et al. discloses a handheld data entry terminal that, upon initialization of a data entry program downloaded from a host computer, is capable of capturing product data, through either a terminal scanner or a data entry keypad, at locations remote from the host computer. A data entry program is downloaded to a battery-powered data entry terminal from a central host computer via a RF data transceiver located in the terminal. If the terminal scanner is functional and the product contains the necessary coded representations of data, the scanner may be enabled, through a first trigger located on a terminal handle, to scan the coded representations of data. Alternatively, the terminal operator may enter alpha/numeric product data through the terminal keypad. The data entry program contains a stack of key definition tables for the terminal keypad, allowing the terminal to be designed with a minimum number of data entry keys and a terminal display of maximum size. If the keypad mode of data entry is used, the terminal operator may scroll through the alternate key definition tables by using certain command keys, or via a second trigger located on the terminal handle, to select the proper key definition table for a particular mode of data entry or to select a particular data entry command. Regardless of the mode of data entry used, the data entered into the terminal is stored in a buffer at the terminal. Once all data has been entered into the buffer, the processor, upon receiving a SEND command, sends the data to the host computer via the terminal RF transceiver.

While not a prior art reference, Applicants cite U.S. Patent No. 5,468,951 to Knowles, et al. as it discloses a laser scanning bar code symbol reader into which the present invention may be embodied in accordance with the inventive principles thereof.

U.S. Patent No. 5,424,525 to Rockstein et al. discloses an automatic bar code symbol reading system comprising components for carrying out object detection, scanning, photoreceiving, A/D conversion, bar code presence detection, symbol decoding, data format conversion, data storage and data transmission functions. In general, the bar code symbol reading device includes a control system having a plurality of control centers that control the operation of the system components in accordance with preselected system control operations. Each of the control centers are responsive to control activation signals generated by certain of the system components upon the occurrence of predefined conditions. Certain of the control centers are capable of overriding other control centers to provide diverse control capabilities which facilitates execution of intelligent operations and power consumption, during bar code symbol reading.

U.S. Patent No. 5,420,411 to Salatto, Jr., et al. discloses a hand-held laser scanner which uses two (2) laser diode illumination systems optimally focused for different working ranges (e.g., short range from 0 to 2 feet, and long-range from 2 to 17 feet).

While not a prior art reference, Applicant cites U.S. Patent No. 5,371,348 to Kumar et al. as it discloses a portable device having a keyboard and a removable scanning module.

While not a prior art reference, Applicants cite U.S. Patent No. 5,354,977 to Roustaei as it discloses a low battery detector.

While not a prior art reference, Applicants cite U.S. Patent No. 5,347,113 to Reddersen et al. as it discloses a bar code symbol reader connected to a key entry data terminal.

U.S. Patent No. 5,340,971 to Rockstein et al. discloses a method and apparatus for automatically reading bar code symbols. One aspect of the present invention concerns a method of reading bar code symbols using an automatic hand-holdable bar code symbol reading device. In general, the automatic bar code symbol reading device comprises a hand-holdable housing containing operative elements which provide an object detection field and a scan field, each defined external to the housing. The method involves automatically detecting the presence of an object within the object detection field by sensing energy reflected off the object.

While not a prior art reference, Applicants cite U.S. Patent No. 5,340,973 to Knowles et al. as it discloses a laser scanning bar code symbol reader into which the present invention may be embodied in accordance with the inventive principles thereof.

While not a prior art reference, Applicants refer to U.S. Patent No. 5,334,821 to Campo et al. as it discloses a portable point of sale (POS) terminal having a keyboard, display, data storage memory, and an RF telecommunication link associable with a bar code symbol scanner.

U.S. Patent No. 5,324,924 to Cai et al. discloses an arrangement for decoding a bar code symbol in which the data resulting from scanning a bar code symbol with a bar code scanner is evaluated to determine if the scanned bar code symbol is within the working range of the scanner. The data acquired by the bar code scanner is evaluated to determine if the detected widths of the bars and spaces of the scanned bar code symbol are too small, less than a threshold value, which indicates that the bar code symbol is too far and outside of the working range of the scanner.

US Patent No. 5,294,782 to Kumar discloses a hand-held transaction terminal having a manually-actuable bar code symbol scanner.

U.S. Patent 5,280,162 to Marwin discloses a bar code laser scanning system, which uses an object detection circuit to initiate bar code symbol reading.

U.S. Patent No. 5,272,324 to Blevins discloses a body-wearable laser scanner, in which a bar code scanner is provided for reading bar code symbols and a power pack and RF transceiver is worn on the torso of the operator to provide a communication link with a host computer.

U.S. Patent No. 5,272,323 to Martino discloses a bar code scanner which employs a digitizer for the signal produced by a photodetector in response to light reflected from a bar code symbol. The digitizer uses a first derivative of the signal to detect peaks, and determines the amount of movement of the signal after each peak to see if a threshold amount of movement has occurred. A second derivative of the signal is used to detect inflection points, and when one occurs after the threshold amount of movement following a peak, a valid transition of the signal is signaled. These valid transitions are decoded to recover the bar code pattern. The threshold used is adjustable to optimize the digitizing for different types of bar code symbols and other conditions, or to provide a squelch function. Dynamic control of the threshold provides a varying response to the scanned bar code symbol. Zero-crossing detectors used with the first and second derivative circuits may also have variable thresholds.

U.S. Patent No. 5,262,627 to Shepart discloses a manually-activated hand-held laser scanner.

U.S. Patent No. 5,260,553 to Rockstein et al. discloses an automatic bar code symbol reading system comprising components for carrying out object detection, scanning, photoreceiving, A/D conversion, bar code presence detection, symbol decoding, data format conversion, data storage and data transmission functions. In general, the bar code symbol reading device includes a control system having a plurality of control centers that control the operation of the system components in accordance with preselected system control operations. Each of the control centers are responsive to control activation signals generated by certain of the system components upon the occurrence of predefined conditions. Certain of the control centers are capable of overriding other control centers to provide diverse control capabilities which facilitate execution of intelligent operation and power conservation during bar code symbol reading.

U.S. Patent 5,250,790 to Melitsky et al. discloses a hand-mounted scanner, with a proximity detector to initiate bar code symbol reading.

U.S. Patent No. 5,237,161 to Grodevant discloses a bar code symbol reading system having a stand-supported mode of operation and a hand-supported mode of operation.

U.S. Patent No. 5,216,233 to Main et al. discloses a method and apparatus for reducing power consumption of a computer system in a suspend mode. When the computer system enters a suspend mode, the main clock is turned off and the internal oscillator is used to refresh the memory. This internal oscillator is designed such that it is only operating when the computer

system is in a suspend mode. The internal oscillator is further designed such that during suspend mode, it operates only to properly refresh the memory and enter or exit the suspend mode.

U.S. Patent No., 5,216,231 to Ouchi discloses a CCD bar code reader.

U.S. Patent No. 5,212,370 to Wittensoldner et. al. discloses a laser bar code symbol scanning system, in which (i) a laser beam produced by a laser diode is driven in a discontinuous mode of operation, and (ii) the reflected light from items in its scan field (i.e., "target area") is detected and the electrical signals produced therefrom are analyzed to determine whether a bar code is present in the scan field. If so, then the laser diode is driven into a continuous mode of operation. If no bar code symbol is detected in the scan field, then the laser diode remains driven in its discontinuous mode of operation.

U.S. Patent No. 5,198,650 to Wilke, Jr. discloses a hands-free/hand-held bar code scanning system, in which a manually-trigger actuated hand-held laser scanner can be operated in a hand-held mode of operation when lifted off the post portion 30 of base 32, and alternatively operated in hands-free mode when supported on post portion 30. As disclosed, the scanner module 40 contained within the egg-shaped housing of the scanner projects a scanning light beam when operated upon actuation of switch number 27, shown in Fig. 1.

U.S. Patent No. 5,191,197 to Metlitsky et al. discloses a hands-free scanning system for reading indicia having parts of different light reflectivity, including a housing having a window and an actuatable electro-optical scanner in the housing for projecting a light beam through the window to indicia to be read, for scanning the indicia. The system further detects light of variable intensity that is reflected off the indicia to generate an electrical signal representative of the indicia. The housing is mounted on an arm of an operator and the scanner initiates reading of the indicia upon movement of the operator's hand relative to the arm by means of an actuator swit

U.S. Patent No. 5,180,904 to Shepard et al. is a Division of U.S. Patent 5,230,520, and discloses a manually-triggered bar code scanner which automatically deactivates its laser light source and scanner motor in response to decoding a bar code signal.

U.S. Patent No. 5,155,346 to Doing, et al. discloses in greater detail the stand used in the dual-mode laser scanning system of U.S. Patent No. 5,155,346.

U.S. Patent No. 5,153,417 to Sakai et al. discloses a bar code reader which includes a hologram receiving a scanning light beam in sequence from a scanning light beam source for (i) directing the scanning light beam to a bar code to be read along one path so that the bar code is scanned with the scanning laser beam in two-dimensional directions, and (ii) guiding the scanning light beam to a photo-detector along the same path after the scanning light beam is reflected from the bar code.

U.S. Patent No. 5,132,523 to Bassett discloses a dual-mode laser scanning system, in which a portable manually trigger-actuated hand-held laser scanner 30 embodies a magnetic flux sensor (i.e., Hall sensor) 44 in order to detect that the hand-held scanner is placed in a matching stand. Upon detecting such arrangement, the Hall sensor 44 produces a control signal which enables microprocessor 54 to energize the scanning motor 56 and laser diode 58, for hands-free

operation of the scanner. When the scanner 30 is to be operated in its normal hand-held operation, the user removes the scanner from its stand housing, whereby magnetic flux sensor 44 generates a control signal which enables the microprocessor 54 to control the scanner in its normal hand-held operation.

U.S. Patent 5,107,100 to Shepard et al. discloses in Fig. 6 a hand-held laser bar code scanner (head) supported from a goose-neck type stand.

U.S. Patent No. 5,086,215 to Carsner et al. discloses an bar code discrimination apparatus (10) which, as indicated at line 9-44 in col. 4, is used in conjunction with a conventional slot-type stationary bar code scanner (34 and 36 and optical mark reader (30). Bar code discrimination apparatus (10) requires the use of a laser scanning unit (20) to generate a zig-zag laser scan line pattern across a scanner form, in order to determine whether a bar code symbol is present for subsequent scanning by slot-type code scanner (34). As indicated at lines 64-68 in Col. 5 and at lines 1-11 in Col. 6, when a bar code is present, an enable signal is sent to conventional decoder (36) to signal the actual scanning and decoding of the bar code symbol (12). If a bar code is not discriminated on the scannable form, then a picking signal is sent to the optical marking reader (30), indicating that it should pick the scannable form from the input hopper and instead begin scanning the optical mark on the scannable form.

U.S. Patent No. 5,075,538 to Swartz et al. discloses a hand-held laser scanner having a printed circuit board upon which a single rotatable mirror structure is mounted. As disclosed, this rotary mirror structure carries both a scanning mirror 66 and a concave collecting mirror 76, which undergo joint oscillatory motion in order to scan a laser beam through scanning window 68, while collecting and focusing reflected laser light towards a photosensor 80.

U.S. Patent No. 5,065,003 to Wakatsuki et al. discloses a casing of a portable data input/transmission apparatus which has an end portion, the size of which is determined such that the end portion can be held by one hand. A pen-scanner type bar code reader for reading a bar code is attached to one end of the casing in the longitudinal direction. A keyboard for enabling at least numerical data to be input is attached near the other end of the casing in the longitudinal direction. A transmitter/receiver is stored within the casing, the transmitter/receiver being designed to output wirelessly to an external data processing apparatus code data read by the bar code reader and at least numerical data input from the keyboard.

U.S. Patent 5,059,777 to Wittensoldner et al. discloses an in-counter type bar code scanner (20), in which changes in ambient light level at the scan window (26) are detected by detector (48), amplifier (52) and threshold comparator (54), so as to provide an operator activity signal (IGE) to microprocessor (56), whereupon laser (59) and spinner motor driver (60) are activated for 16 minutes.

U.S. Patent No. 5,023,438 to Wakatsuki et al. discloses a portable data input apparatus comprises an elongated casing. A pen-scanner type bar code reader reads a bar code provided according to the kind of a commodity, and outputs a corresponding code data unit. A keyboard is designed to input at least a numerical data unit representative of the amount of the commodity. A display device displays the code data unit and the numerical data unit. A display mode changing circuit is designed to invert the image of the data units displayed on the display device in the

vertical direction and the horizontal direction, in response to a detection signal, which is output when the code data and numerical data are inversely displayed.

U.S. Patent No. 5,019,698 to Eastman discloses bar code readers using laser diodes which conserve electrical power and limit output laser radiation to levels required by governmental regulation (1 milliwatt average power) by utilizing a laser diode having an output optical power vs. laser current characteristic which has a slope efficiency in the region where stimulated (laser) emission occurs. The laser is operated with current pulses having a duty cycle less than 100%, and preferably in the range from 50% to 20% in the stimulated emission region of its characteristic, such that the average output laser power does not exceed the level required by government regulations (1mw) while the laser output during the pulses is greater than 1mw. Upon detection after reflection or scattering (return of light) from the bar code, the optical signal is photodetected to provide an electrical signal which is envelope detected and components of the signal at the repetition rate of the current pulses are removed, as by filtering. The filtered signal is digitized to provide a digital signal from which the bar code may be decoded.

U.S. Patent No. 5,017,765 to Shepart et al. (corresponding to U.S. Patent No. 4,758,717) discloses a manually-triggered hand-held bar code symbol reader.

U.S. Patent No. 5,015,833 to Shepard et al. discloses a manually-activated hand-held laser scanner.

U.S. Patent No. 4,970,379 to Danstrom discloses a wand-type bar code scanner supportable in the hand of its user.

U.S. Patent No. 4,962,980 to Knowles discloses a laser scanning engine (i.e. a module) which is activatable by a trigger signal produced from a data terminal.

U.S. Patent No. 4,958,894 to Knowles discloses a laser scanning engine for integration into a bar code symbol reading system.

U.S. Patent No. 4,935,610 to Wike, Jr. discloses a finger-actuated bar code symbol reader in which a laser scanner is strapped to the wrist of the operator and an actuation button is mounted on the index finger thereof.

U.S. Patent No. 4,933,538 to Heiman et al. discloses a bar code symbol scanning system having an automatic (triggerless) mode of operation, during which the laser beam is used to detect the presence of both objects and bar code symbols.

U.S. Patent No. 4,930,848 to Knowles discloses a hand-held laser scanner which includes a manually actuatable member (62) to initiate the operation of the scanner.

U.S. Patent Des. No. 305,885 to Barkan et al. discloses a manually-triggered hand-held bar code scanner.

U.S. Patent No. 4,897,532 to Swartz et al. discloses a hand-held laser scanner having a printed circuit board upon which a single rotatable mirror structure is mounted. As disclosed, this

rotary mirror structure carries both a scanning mirror 66 and a concave collecting mirror 76, which undergo joint oscillatory motion in order to scan a laser beam through scanning window 68, while collecting and focusing reflected laser light towards a photosensor 80.

U.S. Patent No. 4,877,949 to Danielston et al. discloses a manually-activated CCD bar code reader which, as indicated at lines 17-18 in Col. 4 and lines 1-31 in Col. 10, requires manual activation of switch (12) to "wake-up" microprocessor (10) and permit operation of reading distance sensor (22) and flashable illuminator (15).

U.S. Patent No. 4,845,349 to Cherry discloses a manually-triggered laser bar code scanner having laser emission control circuits.

U.S. Patent No. 4,825,057 to Swartz et al. discloses a manually-triggered hand-held laser bar code scanner.

U.S. Patent No. 4,816,660 to Swartz et al. discloses a manually-triggered hand-held laser bar code scanner.

U.S. Patent No. 4,766,299 to Tierney et al. discloses in Fig. 3, at Col. 3, lines 67-68 and at Col. 4, lines 1-7 a hand-mounted bar code symbol reading device which produces visible pointing beam 26 (as visible markers) for directing an infrared laser scanning beam to a bar code to be scanned.

U.S. Patent No. 4,766,297 to McMillan discloses a dual mode (i.e., portable or stationary) system for scanning bar code symbols. As disclosed, a hand-held scanner (12) is received within a stationary stand (44) having an IR object detection system comprising an IR emitter (64), an IR detection (66) and a trigger circuit (70) contained in the head and base portions of the stand, respectively. In order to operate the scanner without activation of its manual trigger switch (26), the scanner output cord (30) must be plugged into the connector input (54) in the base of the stand. The system is wholly incapable of triggerless operation when removed from the stationary stand.

U.S. Patent No. 4,760,248 to Swartz, et al. discloses a hand-held laser scanner having a printed circuit board upon which a single rotatable mirror structure is mounted. As disclosed, this rotary mirror structure carries both a scanning mirror 66 and a concave collecting mirror 76, which undergo joint oscillatory motion in order to scan a laser beam through scanning window 68, while collecting and focusing reflected laser light towards a photosensor 80.

U.S. Patent No. 4,736,095 to Shepard et al. discloses a manually-triggered hand-held laser bar code scanner.

U.S. Patent No. 4,713,785 to Antonelli et al. discloses a system for preventing processing of duplicative coded label signals generated by a scanner lacking item detectors. The system establishes a variable lockout time as a function of operator performance. Any detected label candidate which duplicates a candidate received within the lockout time is assumed to be duplicative. Any transfer to the terminal is inhibited. Operator performance is tracked by measuring the inter-item arrival times for candidates actually transferred to the terminal. The inter-item arrival times are averages over a given number of items. The average value is used to

select a lockout time which is generally proportional to the average inter-item arrival time.

U.S. Patent No. 4,673,805 to Shepard et. al. discloses a manually-triggered hand-held bar code laser scanner.

U.S. Patent No. 4,647,143 to Yamazaki et al. discloses a holographic laser scanner having a transparent glass reading window 40 with a slotted cover 41 disposed thereover, for "cutting off unnecessary light" from reaching photodetector 8 within the housing.

U.S. Patent No. 4,639,606 to Boles et al. discloses at Figs. 3-5 and lines 41-66, Col. 2, an automatic bar code symbol reader that rereads the same bar code symbol every 40 milli-seconds, provided that bar code symbol is decoded each time within 1 milli-second or less time period. (See State Transition Cycle E-F-E in Fig. 5).

U.S. Patent No. 4,621,189 to Kumar et al. discloses a hand-held data entry terminal having a keyboard, display, data storage memory, and an optical scanner head connected thereto for reading bar code symbols.

U.S. Patent No. 4,575,625 to Knowles discloses a manually-triggered hand-held bar code laser scanner.

U.S. Patent No. 4,570,057 to Chadima, Jr., et al. discloses a hand-held diode-array (CCD) bar code reading device. As disclosed at lines 23-32 in Col. 7, the hand-held CCD device includes a trigger switch S1 (e.g. button or proximity detector) which, when closed, effectuates the discharge of flash energy storage capacitor assembly (30) into a Xenon gas filled flash tube (60). In response, flash tube (60) instantaneously illuminates the object with a flash tube (60) instantaneously illuminates the object with a flash of intense light energy, causing a reflected bar code image to be formed through optical system on a 1024 element CCD line scanner (A3). As disclosed at lines 35-39 in Col. 7, data from the CCD line scanner is provided to a microprocessor (A1) which calculates bar spacing and widths and derives the bar code number. As indicated at line 7-18 in Col. 11, if the bar code number is not valid, the microprocessor retriggers Xenon flash tube (60) and repeats the reading process a number of times (e.g., twenty-times).

U.S. Patent No. 4,521,678 to Winter discloses a battery-powered bar code scanner, which has a control circuit that automatically turns itself off when the sensor is not used for a predetermined time period.

U.S. Patent No. 4,496,831 to Swartz et al. discloses a manually-triggered hand-held laser bar code scanner.

U.S. Patent No. 4,465,926 to Apitz et al. discloses a hand-held bar-code reader (bar-code wand) which forms part of an optical reading device and is capable of being led by hand over the bar code, which comprises a storage circuit for storing the data pulse train corresponding to the scanning signals, and a photo- or sound-transmitter by which the stored data pulse train is transmitted to a separate equipment, such as a video tape recorder or radio receiver provided with a photo- or sound-receiver and an evaluating circuit. In another example of embodiment, the equipment comprising the evaluating circuit, contains a reader compartment provided with a

connector member for connection to the reader which, following the scanning and storing of one or more words of the character code, is returned to its compartment and is automatically read out via the connector contacts.

U.S. Patent No. 4,460,120 to Shepard et. al. discloses a manually-triggered hand-held bar code symbol reader.

U.S. Patent No. 4,431,912 to Dickson et al. discloses an encounter optical scanner, in which a light source and detector (16) are provided above the counter (10) in order to generate scan control signals for provision to processor (36).

U.S. Patent No. 4,420,682 to Huber discloses an apparatus and a method for quickly and accurately exchanging tactical military information between military field units utilizing existing communications systems over which digital map data is transmitted. Special maps are used which have the coordinates thereof encoded thereon in machine-readable form. A stylus responsive to said digital map data is adapted to be moved over the coded map to facilitate the plotting of data points corresponding to said digital map data and to read the coordinates of data points to be transmitted as digital map data to other military units.

U.S. Patent No. 4,415,156 to Stadelmann discloses a transaction method for ordering goods or services by mobile telephone, an order for delivery being transmitted to the services provider via a mobile radio network. At least certain order data, in which at least a monetary amount is indicated, are packed in one or more SMS or USSD or e-mail short messages, and are transmitted to a validation platform connected to a short message service center. The indicated monetary amount is deducted from a monetary account of the customer and is transferred to a monetary account of the services provider.

U.S. Patent No. 4,409,470 to Shepard et al. discloses a manually-triggered hand-held laser bar code scanner.

U.S. Patent No. 4,387,297 to Swartz et al. discloses a manually-triggered bar code reading device.

U.S. Patent No. 4,282,425 to Chadima, Jr. et al. discloses a portable bar code symbol reader having a flash-type illuminator and proximity sensor similar to the system disclosed in the U.S. Patent No. 4,570,057.

U.S. Patent No. 4,279,021 to See et al. discloses a reprogrammable hand-held data entry device having a data entry keyboard display, a battery power pack, data storage memory and a serial data communication port for connection of peripheral data entry device.

U.S. Patent No. 4,240,064 to DevChoudhury discloses a power control circuit for a bar code reading system which supplies power to the system only when the bar code is being read.

U.S. Patent No. 4,086,476 to King discloses a counter-type optical reader having a control system which utilizes a photo-diode (42) and light source (46) to generate a signal upon the interruption of the light beam from the light source by an object.

U.S. Patent No. 4,072,859 to McWaters discloses a portable optical character recognition system having an object detection circuit which uses infra-red light.

European Patent Application Publication No. 0 460 669 A2 discloses a laser scanner which employs a light-based object detector that automatically senses the presence of an object by sensing light reflected off the object, and in response thereto, automatically produces a laser scanning beam for reading bar code symbols that might be located on the detected object.

European Application No. EPO 0 424 976 A2 by Canon Kabushiki Kaisha discloses a data reading apparatus which has a data reading device, which is set in a data read state upon operation of an operation switch, provided with a first timer for measuring a time in which the operation switch is not operated, and a second timer for measuring a time in which no data input is detected while the operation switch is operated, wherein the data reading state is canceled according to an output from the first or second timer.

European Application No. 0 414 452 A1 by NCR Corporation discloses a portable hand-held optical scanner comprising a disk-shaped housing which fits within the palm of the hand of a checkout operator, which scanner includes a scanning mechanism for generating a scanning pattern for scanning coded indicia, a strap member for securing the hand of the operator to the housing, a switch mounted on the rear surface of the housing adjacent the fingers of the operator for easy operation by the operator, a data processor and a transmitter for transmitting the data read by the scanner to a remote pickup.

EPO NO. 0323 848 A3 to Kurimoto discloses a bar code reader having a laser scanner for scanning bar code symbols and an object detector for detecting an object bearing the bar code symbols.

The Symbol Technologies' Technology and White Paper entitled "Pocket-Sized Computing For the Mobile Industry Professionals" (3 pages) discloses a hand-held palm-type computing device (i.e. Symbol's SPT 1500) in which a laser scanning bar code symbol scanner is integrated. The laser scanner is activated by a manually-actuatable switch disposed on the hand-supportable housing of the device.

The Symbol Technologies' Press Release entitled "Symbol Adds Functionality to PalmPilot" (2 pages) discloses a hand-held palm-type computing device (i.e. Symbol's SPT 1500) in which a laser scanning bar code symbol scanner is integrated. The laser scanner is activated by a manually-actuatable switch disposed on the hand-supportable housing of the device.

The product brochure for Metrologic's MH290 Hand Held Laser Scanner describes a lightweight handheld bar code laser scanner with a large depth of field.

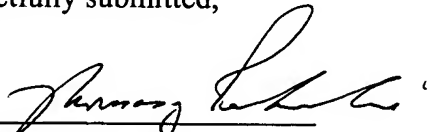
The 1984 IBM Technical Bulletin entitled "Hand-Held Holographic Scanner Having Highly Visible Locator Beam" describes a hand-held bar code scanner that uses a semiconductor laser as the source of the infrared scan beam, and a second incandescent light source to provide guidance to the operator in scanning operations. The light produced by this incandescent light source would be filtered by a blue or green filter to provide a highly visible output beam.

A separate listing of the above references on PTO Form 1449, hard copies of the foreign and technical references, and a compact disc containing copies of U.S. references in .pdf format, are enclosed herewith for the convenience of the Examiner.

Applicants believe that no fees are due at this time. However, if deemed necessary, the Commissioner is hereby authorized to charge any fee deficiencies to Deposit Account No. 16-1340.

Respectfully submitted,

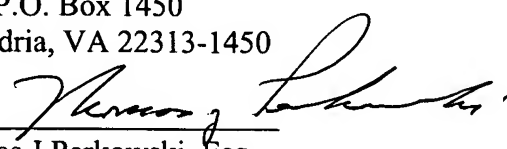
Dated: May 20, 2005


Thomas J. Perkowski
Reg. No. 33,134
Attorney for Applicants
Thomas J. Perkowski, Esq., P.C.
Soundview Plaza
1266 East Main Street
Stamford, Connecticut 06902
203-357-1950
<http://www.tjpatlaw.com>

CERTIFICATE OF MAILING UNDER
37 C.F.R. 1.8

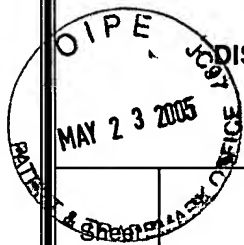
I hereby certify that this correspondence
is being deposited with the United States
Postal Service on May 20, 2005, in a Postage
Prepaid envelope as, First Class Mail,
addressed to:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450


Thomas J Perkowski, Esq.

Date: May 20, 2005

Substitute for form 1449A/PTO



**INFORMATION
DISCLOSURE STATEMENT
BY APPLICANT**

1

of

11

Complete If Known

Application Number	10/758,603
Filing Date	January 15, 2004
First Name Inventor	Mark Schmidt et al.
Group Art Unit	2876
Examiner Name	N/a
Attorney Docket Number	108-182USANA0

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intn'l Class / Sub Class
		Number	Kind Code (if known)			
		6,698,952		Goddard	03/02/2004	B41J 3/39
		6,464,144		Swartz et al.	10/15/2002	G06K 7/10
		6,415,156		Stadelmann	07/02/2002	H04Q 7/20
		6,398,112		Li et al.	06/04/2002	G06K 7/10
		6,334,573		Li et al.	01/01/2002	G06K 7/10
		6,305,607		Katz et al.	10/23/2001	G06K 7/10
		6,182,898		Schmidt et al.	02/06/2001	
		6,154,853		Foote	12/26/2000	B41J 5/08
		6,158,662		Kahn et al.	12/12/2000	G06K 7/10
		6,138,914		Campo et al.	10/31/2000	G06K 7/10
		6,105,871		Campo et al.	08/22/2000	G06K 7/10



U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intr'l Class / Sub Class
		Number	Kind Code (if known)			
		6,102,294		Swartz et al.	08/15/2000	G06K 7/10
		6,027,021		Kumar	02/22/2000	G06K 7/10
		6,021,947		Swartz	02/08/2000	G06K 7/10
		5,966,230		Swartz et al.	10/12/1999	G02B 26/08
		5,945,660		Nakasuji et al.	08/31/1999	G06K 7/10
		5,925,873		Kumar	07/20/1999	G06K 7/10
		5,914,480		Swartz	06/22/1999	G06K 7/10
		5,786,582		Roustaei et al.	07/28/1998	G02B 26/08
		5,756,982		Knowles et al.	05/26/1998	
		5,747,785		Miller et al.	05/05/1998	G06K 7/10
		5,616,906		Kumar	04/01/1997	G06K 7/10
		5,610,386		Ball et al.	03/11/1997	G06K 7/10
		5,600,121		Kahn et al.	02/04/1997	G06K 7/10

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intn'l Class / Sub Class
		Number	Kind Code (if known)			
		5,496,992		Madan et al.	03/05/1996	
		5,468,951		Knowles et al.	11/21/1995	G06K 7/10
		5,424,525		Rockstein et al.	06/13/1995	G06K 7/10
		5,420,411		Saletto, Jr. et al.	05/30/1995	G06K 7/10
		5,371,348		Kumar et al.	12/06/1994	G06K 7/10
		5,354,977		Roustaei	10/11/1994	G06K 7/10
		5,347,113		Reddersen et al.	09/13/1994	G06K 7/10
		5,340,971		Rockstein et al.	08/23/1994	G06K 7/10
		5,340,973		Knowles et al.	08/23/1994	G06K 7/10
		5,334,821		Campo et al.	08/02/1994	G06K 5/00
		5,324,924		Cal et al.	06/28/1994	G06K 7/10
		5,294,782		Kumar	03/15/1994	G06K 7/10
		5,280,162		Marwin	01/18/1994	G06K 7/10

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intr'l Class / Sub Class
		Number	Kind Code (if known)			
		5,272,324		Blevins	12/21/1993	G06K 7/10
		5,272,323		Martino	12/21/1993	G06K 7/10
		5,262,627		Shepard	11/16/1993	G06K 7/10
		5,260,553		Rockstein et al.	11/09/1993	G06K 7/10
		5,250,790		Melitsky et al.	10/05/1993	G06K 7/10
		5,237,161		Grodevant	08/17/1993	G06K 7/10
		5,126,233		Main et al.	06/01/1993	G06F 7/10
		5,216,231		Ouchi	06/01/1993	G06K 7/10
		5,212,370		Wittensoldner et al.	05/18/1993	G06K 7/10
		5,198,650		Wilke, Jr.	03/30/1993	G06K 7/10
		5,191,197		Metlitsky et al.	03/02/1993	G06K 7/10
		5,190,650		Shepart et al.	01/19/1993	G06K 7/10
		5,155,346		Doing et al.	10/13/1992	G06K 7/10

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intr'l Class / Sub Class
		Number	Kind Code (if known)			
		5,153,417		Sakai et al.	10/06/1992	G06K 7/10
		5,132,523		Bassett	07/21/1992	G06K 7/01
		5,107,100		Shepard et al.	04/21/1992	G06K 7/00
		5,086,215		Carsner et al.	02/04/1992	G06K 7/10
		5,075,538		Swartz et al.	12/24/1991	G06K 7/10
		5,065,003		Wakatsuki et al.	11/12/1991	
		5,059,777		Wittensoldner et al.	10/22/1991	G06K 7/00
		5,023,438		Wakatsuki et al.	06/11/1991	G06K 7/14
		5,019,698		Jay	05/28/1991	G06K 7/10
		5,017,765		Shepart et al.	05/21/1991	G06K 7/00
		5,015,833		Shepard et al.	05/14/1991	G06K 7/10
		4,970,379		Danstrom	11/13/1990	G06K 7/14
		4,962,980		Knowles	10/16/1990	G02B 26/10

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intr'l Class / Sub Class
		Number	Kind Code (if known)			
		4,958,894		Knowles	09/25/1990	G02B 26/10
		4,935,610		Wike, Jr.	06/19/1990	G06K 7/10
		4,933,538		Heiman et al.	06/12/1990	G06K 7/10
		4,930,848		Knowles	06/05/1990	G02B/10
		Des. 305,885		Barkan et al.	02/06/1990	
		4,897,532		Swartz et al.	01/30/1990	G06K 7/10
		4,877,949		Danielson et al.	10/31/1989	G06K 7/10
		4,845,349		Cherry	07/04/1989	G04K 7/10
		4,825,057		Swartz et al.	09/25/1990	
		4,816,660		Swartz et al.	03/28/1989	G06F 7/10
		4,766,299		Tierney et al.	08/23/1988	
		4,766,297		McMillan	08/23/1988	
		4,760,248		Swartz et al.	07/26/1988	G06K 7/10

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intr'l Class / Sub Class
		Number	Kind Code (if known)			
		4,736,095		Shepard et al.	04/05/1988	
		4,713,785		Antonelli et al.	12/15/1987	G06F 15/24
		4,673,805		Shepard et al.	06/16/1987	G06K 7/10
		4,647,143		Yamazaki et al.	03/03/1987	G02B 26/10
		4,639,606		Boles et al.	01/27/1987	G06K 7/10
		4,621,189		Kumar et al.	11/04/1986	G06K 7/10
		4,575,625		Knowles	03/11/1986	G06K 7/10
		4,570,057		Chadima, Jr. et al.	02/11/1986	G06K 7/10
		4,521,678		Winter	06/04/1985	G06K 7/10
		4,496,831		Swartz et al.	01/29/1985	G06K 7/10
		4,465,926		Apitz et al.	08/14/1984	
		4,460,120		Shepard et al.	07/17/1984	G06K 9/24
		4,431,912		Dickson et al.	02/14/1984	G06K 7/10

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intr'l Class / Sub Class
		Number	Kind Code (if known)			
		4,420,682		Huber	12/13/1983	G06K 7/10
		4,409,470		Shepard et al.	10/11/1983	G06K 7/10
		4,387,297		Swartz et al.	06/07/1983	G06K 9/24
		4,282,425		Chadima, Jr.	08/04/1981	G06K 7/10
		4,279,021		See et al.	07/14/1981	G06F 15/06
		4,240,064		DevChoudhury	12/16/1980	G06K 7/14
		4,086,476		King	04/25/1978	G06K 7/10
		4,072,859		McWaters	02/07/1978	H01J 39/12

PUBLICATIONS

Examiner Initials	Cite No.	Description
		The web-based publication entitled "Pocket-Sized Computing For Mobile Industry Professionals" by Symbol Technologies, Inc., http://www.smbol.com/wp/stwp0006.htm , 1998, pages 1-3.
		The 1998 press release entitled "Symbol Adds Functionality To Palmpilot" by Symbol Technologies, Inc., http://www.symbol.com/press.100pr.htm , March 23, 1998, pages 1-2.
		The product brochure for the MH290 Hand Held Laser Scanner by Metrologic Instruments, Inc., 1987, pages 1-2.
		The technical publication entitled "Hand-Held Holographic Scanner Having Highly Visible Locator Beam" by R.T. Cato, IBM Technical Disclosure Bulletin, Vol. 27, No. 4, September 1984, pages 2021-2022.

FOREIGN PATENT DOCUMENTS

Examiner Initials		Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intn'l Class / Sub Class	T •
		Numbe r	Kind Code (if known)					
		JP	EP 460 669		Osaka Works of Sumitomo, Osaka, Japan	11/12/1991		
		EP	0 424 976 A2		Canon Kabushiki Kaisha, Tokyo, Japan	05/02/1991		
		EP	0 414 452 A1		NCR Corporation	02/27/1991		
		EP	0 323 848		Tokyo Electric Co., Ltd.; Tokyo, Japan	07/12/1989	G 06 K 7/10	

PUBLICATIONS		
Examiner Initials	Cite No.	Description
		Search Report for International Application No. PCT/US99/28530, 1999
		Search Report for International Application No. PCT/US04/00762, 2004

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance not considered. Include copy of this form with next communication to applicant.

(INFORMATION DISCLOSURE STATEMENT – SECTION 9 PTO-1449)